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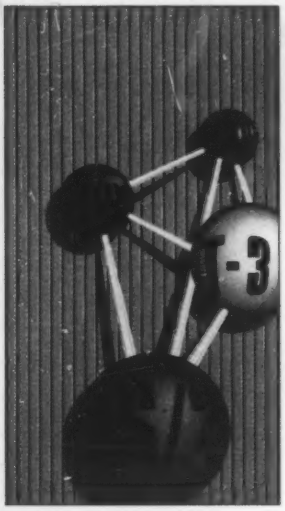

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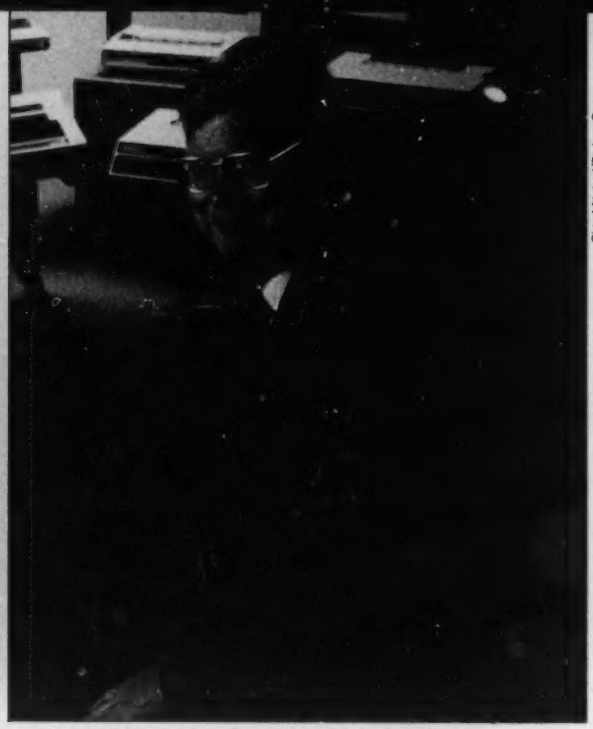

Chip Mitchell/Picture Group

Bruce Bastion, of Wordperfect Corp., and Curtis Powell, of Genicom, each presided over a booming year.

PERFORMANCE REPORT

Micro industry: Gloom follows boom

With the PS/2, IBM has reasserted its control over the largest portion of the microcomputer market. Some analysts believe the challenge to clone makers will cause a shakeout.

by Lee Keough

After watching its imitators cash in on an industry rebound while its sales fell some 10 percent, IBM changed the ground rules of the microcomputer market this year with its Personal System/2. The market won't be the same.

The PS/2 raises the ante for everyone in the IBM-compatible market. It's more difficult—and expensive—to develop software and add-ons for the new machine than for the Personal Computer series. For that reason, among others, analysts expect a shakeout soon.

"It used to be that any kid out of engineering school could knock off the PC," says Jonathon Yarmis, research analyst at the Gartner Group Inc., Stamford, CT. "The PS/2 requires some manufacturing ability." Higher costs, he says, will lessen the market appeal for a number of manufacturers. "Schlock outfits will go on to sell the next hula hoop," he remarks.

The 1987 DECISIONS Performance Report on the micro industry is based on financial data for the 12 months ending March 31. Thus, it is more a depiction of the rebound in the industry that occurred last year than it is a picture of an industry in transition. The possible effects of the PS/2 on vendors in IBM PC-related markets are only now becoming apparent—they won't show up in financials until the end of this year at the earliest.

Indeed, micro sales exploded immediately after the PS/2 announcement. Increased buying probably reflected purchasing plans that were deferred until buyers saw IBM's long-rumored second-generation micros. IMS America Ltd., a Plymouth Meeting, PA-based market researcher, estimates U.S. sales of micros for the quarter ending in June at $412 million, a 63 percent increase from the same period a year earlier.

It's too early to tell how much of the market IBM will grab with the PS/2. Data from the second DECISIONS/Paine Webber Survey of MIS Attitudes indicate significant interest among MIS buyers in both the machine and its operating system, Operating System/2. IMS America pegs early shipments at about 65 percent of the market. IBM says it shipped more than 300,000 PS/2s—most of them to dealers—before the end of June.

The year before the PS/2's announcement will probably be remem-

'87	'86	Company	'87 Revenues (000)	'86 Revenues (000)	% Growth
		Computers			
1	1	Apple Computer Inc. *(Cupertino, CA)*	**2,196,645**	1,727,472	27
2	2	Tandy Corp. *(Fort Worth, TX)*	**1,603,933**	1,469,447	9
3	3	Compaq Computer Corp. *(Houston)*	**692,212**	550,870	26
4	4	Zenith Electronics Corp. *(Glenview, IL)*	**548,000***	352,000	56
5	5	NEC Information Systems Inc. *(Boxborough, MA)*	**340,000**	218,000	56
6	6	Tandon Corp. *(Chatsworth, CA)*	**158,982**	96,000	66
7	8	Kaypro Corp. *(Solana Beach, CA)*	**102,236**	66,080	55
8	7	Telxon Corp. *(Akron, OH)*	**100,819**	82,095	23
9		Dell Computer Corp. (PC's Limited) *(Austin, TX)*	**69,450**	N/A	N/A
10	9	Grid Systems *(Fremont, CA)*	**60,000****	56,600**	-6
11		Leading Edge Products Inc. *(Canton, MA)*	**40,000**	N/A	N/A
12	10	Fortune Systems Corp. *(Belmont, CA)*	**34,948**	49,359	-29
13	15	Blue Chip Electronics Inc. *(Chandler, AZ)*	**30,000****	6,000**	400
14	12	Wicat Systems *(Orem, UT)*	**28,040**	39,405	-29
15	11	Victor Technologies Inc. *(Scotts Valley, CA)*	**25,959**	49,260	-47
		Total Computers	**6,031,224**	4,762,588	26.6
		Peripherals			
1	1	Epson America Inc. *(Torrance, CA)*	**250,000**	175,000	43
2	2	AST Research Inc. *(Irvine, CA)*	**182,818**	174,682	5
3	5	Intelligent Systems, Master L.P. *(Norcross, GA)*	**152,770**	125,541	22
4	3	Printronix Inc. *(Irvine, CA)*	**123,651**	131,892	-6
5	6	Quantum Corp. *(Milpitas, CA)*	**120,760**	121,244	0
6	4	Iomega Corp. *(Roy, UT)*	**107,446**	127,275	-16
7	8	Genicom Corp. *(Waynesboro, VA)*	**107,006**	75,555	42
8	7	Brother International Corp. *(Piscataway, NJ)*	**102,000***	92,000	11
9	11	QMS Inc. *(Mobile, AL)*	**95,384**	55,054	73
10	9	Toshiba America Inc. *(Tustin, CA)*	**90,000**	70,000	29
11	14	CMS Enhancements Inc. *(Tustin, CA)*	**80,133**	34,000	136
12	10	Okidata Corp. *(Mount Laurel, NJ)*	**75,000**	60,000	25
13	12	Hercules Computer Technology *(Berkeley, CA)*	**70,000**	50,000	40
14	17	Everex Systems Inc. *(Fremont, CA)*	**63,327****	18,790**	23
15	15	Mountain Computer Inc. *(Scotts Valley, CA)*	**51,000****	29,000**	76
		Total Peripherals	**1,671,295**	1,340,033	24.7
		Software			
1	2	Microsoft Corp. *(Redmond, WA)*	**308,087**	172,473	79
2	1	Lotus Development Corp. *(Cambridge, MA)*	**298,382**	250,117	19
3	3	Ashton-Tate Corp. *(Torrance, CA)*	**210,799**	121,571	73
4	8	WordPerfect Corp. *(Orem, UT)*	**62,176**	28,996	114
5	7	Autodesk Inc. *(Sausalito, CA)*	**52,381**	29,531	77
6	4	Softech Inc. *(Waltham, MA)*	**44,353**	42,334	-5
7	5	Micropro Intl. Corp. *(San Rafael, CA)*	**34,995**	41,859	-16
8	9	Software Publishing Corp. *(Mountain View, CA)*	**30,599**	28,779	6
9	6	Digital Research Inc. *(Monterey, CA)*	**30,000***	35,000*	-14
10	10	Borland International *(Scotts Valley, CA)*	**29,200**	27,100	8
11	19	Adobe Systems Inc. *(Palo Alto, CA)*	**20,531**	4,604	346
12	12	Innovative Software Inc. *(Lenexa, KS)*	**17,325**	10,325	66
13	16	The Santa Cruz Operation Inc. *(Santa Cruz, CA)*	**17,100***	6,100*	180
14	14	Microrim Inc. *(Redmond, WA)*	**15,200***	7,500*	-103
15	11	Micro Data Base Systems Inc. *(Lafayette, IN)*	**13,200***	12,500*	6
		Total Software	**1,184,328**	818,891	44.6
		Total Computers, Peripherals, and Software	**8,886,847**	6,921,512	28.4

bered with fondness by most vendors. As the numbers indicate, business was brisk, particularly in the IBM PC-compatible market. Analysts attribute the market's renewed vigor to a combination of a normal upswing in the business cycle and deep discounts and price cutting. Standardization and improved connectivity products also contributed to the resurgence.

IBM-compatible vendors were not the only beneficiaries of last year's boom. Apple Computer Inc. bounced back from near oblivion to strengthen its position as the second-largest micro maker. For the quarter ending in June, IMS America estimates, sales of the Apple Macintosh were up 187 percent over the same period the year before. With the Macintosh II, Apple opened its architecture and provided new connections to MS-DOS. "Apple is doing all the right things," says Yarmis at the Gartner Group.

But for MIS, the IBM standard, not the Mac, is where it's at. No one—except Apple, perhaps—believes the

Total '87 Revenues (000)	Total '87 Profits (000)
2,196,645	157,565
5,791,459	380,683
692,212	54,726
1,892,100	(10,000)
218,000	340,000
264,970	(59,419)
102,236	3,884
100,819	12,730
69,450	2,161
60,000	N/A
N/A	N/A
34,948	(3,505)
30,000	N/A
28,040	11,567
25,959	(7,404)
250,000	N/A
182,818	14,521
152,770	2,475
123,651	(4,892)
120,760	41,491
107,446	(15,660)
181,366	9,360
275,000	N/A
95,384	8,084
476,000	N/A
80,133	N/A
120,000	N/A
63,327	3,401
51,000	N/A
41,644	2,157
308,087	66,128
298,382	50,636
210,799	30,100
62,176	N/A
52,381	11,620
44,353	448
34,995	(2,177)
30,599	2,537
30,000	N/A
29,200	2,100
20,531	4,418
17,325	2,779
17,100	N/A
15,200	N/A
13,200	N/A

**CY **FY N/A Not Available*
Unless otherwise noted annual revenues are based on the four fiscal quarters ending on or before March 31.

ON A FAST TRACK . . .

Company	'87 Revenues (000)	% Growth	'86 Revenues (000)
1 Blue Chip Electronics Inc.	30,000	400	6,000
2 Adobe Systems Inc.	20,531	346	4,604
3 Everex Systems Inc.	63,327	237	18,790
4 The Santa Cruz Operation Inc.	17,100	180	6,100
5 CMS Enhancements Inc.	80,133	136	34,000
6 Wordperfect Corp.	62,176	114	28,996
7 Microrim Inc.	15,200	103	7,500
8 Microsoft Corp.	308,087	79	172,473
9 Autodesk Inc.	52,381	77	29,531
10 Mountain Computer Inc.	51,000	76	29,000

. . . FALLING OFF THE PACE

Company	'87 Revenues (000)	% Growth	'86 Revenues (000)
1 Victor Technologies Inc.	25,959	-47	49,260
2 Fortune Systems Corp.	34,948	-29	49,359
3 Wicat Systems	28,040	-29	39,405
4 Micropro Int'l. Corp.	34,995	-16	41,859
5 Iomega Corp.	107,466	-16	127,275
6 Digital Research Inc.	30,000	-14	35,000
7 Printronix Inc.	123,651	-6	131,892
8 Quantum Corp.	120,760	0	121,244

DECISIONS chart

Mac is a serious threat to the IBM PC or PS/2 in corporate applications. The IBM market is where most of the growth is. Indeed, the clone business was so hot last year that it attracted peripheral vendors Tandon Corp. (disk drives), AST Research Inc. (add-on boards), and Epson America Inc. (printers). Each redirected its resources to develop complete systems.

Both high- and low-cost imitators of the IBM and DOS standards say they can continue to compete favorably with IBM, although it should become more expensive to do so. OS/2 will run on most micros based on Intel 80286 and 80386 processors, clones included. The PS/2's wrinkles—its Micro Channel bus, a smaller size (which will force add-on board makers to produce smaller, denser products), a new Video Graphics Array standard, and $3^1/_2$-inch disk drives—will cause problems for clone makers, however.

IBM-compatible vendors say the PS/2's Micro Channel and its small size are its two most troublesome features. The Micro Channel, which allows for multitasking and faster access to disk drives, will be the most difficult feature for the clone makers to emulate. But it will be emulated.

At least one competitor is unimpressed by Micro Channel. "The Micro Channel is a myth," offers Graham Beachum, vice president of sales and marketing for Dell Computer Corp., which sells the PC's Limited brand. "It's another example of IBM spreading fear, uncertainty and doubt [among users]." But Ted Bajarin of Creative Strategies, a Santa Clara, CA, consultancy, believes Micro Channel gives IBM legal leverage against imitators. "If it wanted to, IBM could hang you up in court," he says.

AST Research asserts that the IBM PC AT's bus augmented by the new Lotus, Intel, Microsoft Extended-Memory Specification is as good as the Micro Channel. The spec makes more than 640 Kbytes of memory—enough for multitasking—available to users of MS-DOS machines.

Add-on board makers may be the most seriously affected by the PS/2. AST Research says the new boards will require manufacturers to retool to employ the surface mount technology needed to produce denser circuitry. Analysts expect this requirement to keep down the number of vendors in the PS/2 add-on market.

Software: A gold mine

Business boomed for microcomputer software vendors last year; the top 15 micro software marketers grew nearly 45 percent. Micro software

vendors skipped the slump of 1985, and the future should also remain bright, despite PS/2. Wordperfect Corp. was the biggest surprise, moving up to the fourth spot among micro software vendors, and possibly setting a standard within the fragmented word processing market.

"We haven't taken the market by storm by any means," says Andre Peterson, director of PC marketing for Wordperfect, "but we're getting beyond our original cult following." Wordperfect's success, says Peterson, is due not only to the program's features, but also its ability to run on numerous hardware platforms, including the Digital Equipment Corp. VAX.

Meanwhile, Micropro International Corp., whose Wordstar was once the leading light in micro word processing, is one of the few software houses to have fallen on hard times.

Most analysts expect OS/2 to gain dominance only slowly. But OS/2 need not be dominant to change the fortunes of software vendors. Peterson estimates that development projects for OS/2 applications will cost at least $1 million to $2 million each. Small developers hoping to jump on the new standard (as Lotus did with MS-DOS) will obviously be hampered by this high cost of entry, says Peterson. However, even large companies will be hurt, if they're marginally profitable. Just converting existing packages to OS/2 will burn up a lot of capital.

At the same time, software vendors may find customer requirements changing, says Robert Therrian, an analyst at Paine Webber Inc., New York. He expects much OS/2 development by users. "The complexity of OS/2 encourages customization of applications," he says.

Analysts believe the best-positioned vendors are Microsoft, Lotus Development Corp., and Ashton-Tate. Not only can they afford to rewrite their programs for OS/2, but they also sell the tools allowing users to customize applications. Lotus's most serious competition is likely to come from Microsoft, which recently announced PC Excel, a graphically oriented spreadsheet. Lotus has mounted a counterattack by anouncing 1-2-3 for the Macintosh, a market that Excel currently dominates. Lotus's trump card, however, will be its special development agreement with IBM to put 1-2-3 on mainframes.

Of the three, only Ashton-Tate doesn't have a close relationship with IBM. Although that fact initially caused concern about Ashton-Tate's future, its 73 percent growth rate put those fears to rest. Lotus and Ashton-Tate have been able to maintain their grip on their markets despite an assault from low-cost clones. And they've been able to do it without cutting prices. That fact signifies to Bajarian that the cost of micro software will remain stable. "If anything, prices will go up," he says.

Ashton-Tate, like almost every vendor in the micro market, should see its fortunes change as a result of the PS/2. Vendors with a carefully chosen strategy can float inside IBM's current—and that is expected to run at a rapid pace in the year ahead. **D**

Laura Daly, a free-lance editor based in Maywood, NJ, contributed to this report.

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